LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

OFFICE OF FISHERIES
INLAND FISHERIES DIVISION

PART VI -A

WATERBODY MANAGEMENT PLAN SERIES

UNIVERSITY LAKES

LAKE HISTORY & MANAGEMENT ISSUES

CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED ANNUALLY

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LAKE HISTORY

GENERAL INFORMATION

Date formed

University Lake was constructed in 1938 by the Emergency Relief Administration. Lake development was accomplished by the timbering of cypress swamps and the impoundment of Bayou Duplantier.

Impoundment

Expansion of residential development and the Louisiana State University campus resulted in the subdivision of the original lake into the current Lake District System (Figure 1). There are six urban lakes that range in area from four to 196 acres, with a cumulative area of approximately 275 acres.

University Lake is the largest lake of the system at approximately 196 acres in size. The watershed is approximately 1,071 acres and includes the City Park Lake, Crest Lake, and Lake Erie watersheds. The average depth of University Lake is 3.8 feet to the clay layer and 2.1 feet to the upper layer. University Lake has a water volume of 2,642,800 m^3.

City Park Lake is approximately 54 acres in size and receives approximately 50 percent of the total inflow to the lakes from about 474-acres of the watershed. Most of the inflow enters the lake from the upstream portion of Bayou Duplantier through City Park. The lake has an average depth of three feet. City Park Lake has a water volume of 448,800 m^3.

Campus Lake is located on the southern end of the system and is approximately seven acres in area. The watershed is approximately 105 acres of the LSU campus. The lake has an average depth of 1-2 feet. Campus Lake drains into Corporation Canal and thus is not hydraulically connected to any of the other lakes within the lake system.

College Lake is southeast of Campus Lake and is approximately five acres in size with a watershed of approximately 65 acres. The lake has an average depth of four feet. College Lake drains into Corporation Canal and is not connected to the other lakes.

Crest Lake is approximately nine acres in size with limited runoff from a drainage basin of approximate 15 acres in size. The lake receives wind-driven flows through culverts from University Lake when winds are out of the south. The lake has an average depth of four feet.

Lake Erie is a small arm of City Park Lake that is approximately four acres in area. The watershed is approximately 103 acres and the lake has an average depth of two feet.

In the 1930s, Corporation Canal was built to re-route runoff from the urban area of Baton Rouge around the lakes. The canal is located on the west and south sides of University Lake and drains into Bayou Duplantier downstream of the lakes system (Figure 2). Two

of the lakes, Campus and College Lake, drain into Corporation Canal and are not connected to the other lakes. The remaining four lakes are connected through a series of culverts and risers with ultimate outflow from University Lake into Bayou Duplantier through a spillway. Spillways are used to maintain pool stage and are located in the southern portion of City Park and University Lake (Figure 2).

Figure 1. Aerial view of East Baton Rouge Parish, Louisiana and the Lake District System. University Lake is the largest of the six lakes. Imagery taken in 2015.

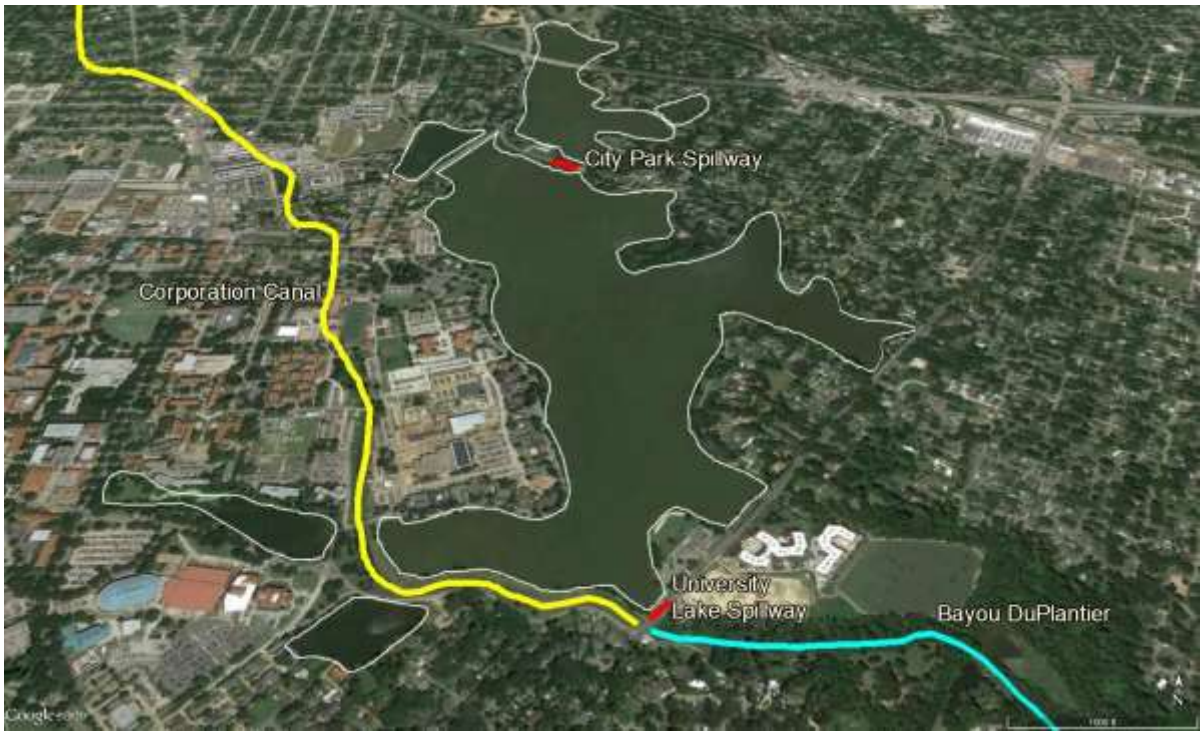

Figure 2. Aerial view of the Lake District and Corporation Canal, Bayou DuPlantier, along with City Park and University Lake spillways, Baton Rouge, LA. Imagery taken in 2015.

Purposes for creation

The Lake District was constructed under the Emergency Relief Administration to provide jobs to workers that lost their employment during the Great Depression. The draining and logging of the swamp land around the Lake District also provided land to be developed for both private and public interests.

Watershed

Watershed for the University Lakes totals 1,071 acres. Watershed to lake area is approximately 4:1. There are also 35 storm water outfalls into the lake that are major contributors to discharge, water quality and sedimentation.

Pool stage

University Lake is maintained at 22.8' mean sea level (MSL). The Lake District is within the Federal Emergency Management Agency 100-year flood plain. Base Flood Elevation is set at 25' MSL. At 25' MSL, the lake system has an approximate storage of 935 acre feet. The lake system rarely fluctuates more than 2 feet from pool elevation.

Parish/s located

East Baton Rouge, Louisiana.

Border waters

NA

Drawdown description

Spillway – University Lake
Gate size – 82" wide, 30.5" tall
Number of gates - 2
Condition – Fair to poor, probably has not been used since restoration work was finished in May 1983.

LAKE AUTHORITY

Owners

Louisiana State University up to elevation 22.6 MSL
Original land donations
15 August 1918 - Thomas W. Atkinson (and others)
11 August 1933 - Etta B. Jolly
- Caz-Park Realty Inc.
- Bodave, Inc. and Clara R Davidson
- William A. Rolston

Who controls

Louisiana State University owns the lake and water bottom. The City/Parish owns the spillway structure.

Association

No active lake association

Authorization

City of Baton Rouge

ACCESS

Boat docks

There is one public boat ramp located at Stanford Beach (SEE APPENDIX I – MAP AND LANDING).

Piers

One public pier is located at Stanford Beach. There are several wharves or docks constructed by private individuals around the lake. The LSU rowing team also has a pier for their use.

State/Federal facilities

None

Reefs

None

SHORELINE DEVELOPMENT

Shoreline development by Landowners

100% of the shoreline is developed by either private or public interests. This includes residential property, bicycle and walking trails, roadways, bird sanctuary and Baton Rouge Recreation (BREC) park facilities.

State/National Parks

There is no state or national parks. A BREC park is located adjacent to Stanford Avenue near the spillway of University Lake.

PHYSICAL DESCRIPTION

Shoreline length

The perimeter of University Lake is approximately 4.5 miles in length.

Timber type

A few bald cypress (*Taxodium distichum*) trees are located along shoreline and in shallow areas. Live oak (*Quercus virginiana*), water oak (*Quercus nigra*), sugarberry (*Celtis laevigata*), red maple (*Acer rubrum*), black willow (*Salix nigra*) and various pine (*Pinus* spp.) species are also located along the bank.

Average depth

The average depth of University Lake is 2.1 feet.

Maximum depth

The maximum depth of University Lake is 5.5 feet.

Natural seasonal water fluctuation

No seasonal fluctuations occur except for small variations due to extreme weather events such as drought or tropical storms.

EVENTS / PROBLEMS

TIMELINE OF EVENTS

- 1925 – 60 acres of Perkins Swamp (site of the now Lake District) were timbered and flooded. A dike was constructed where the City Park spillway now exists.
- 1933 – Emergency Relief Administration began construction of the lake.
- 1938 – Lake construction completed.
- 1978 – EPA provides a grant to the city of Baton Rouge for lake restoration. The goals of the restoration project were to remove phosphorus-laden sediments, increase retention times, increase water depths, and to improve dissolved oxygen levels.
- 1981-1983 – As part of the restoration project, University Lake is dredged along with City Park, Campus, and College lakes. Effectiveness of dredging was limited due to numerous stumps from the original swamp. Sewer lines were also repaired in an effort to reduce fecal coliform contamination. These restoration efforts resulted in a general improvement of water quality.

- 1991 – Post Restoration Report completed by Louisiana State University. The report assessed the permanent impacts of the 1981-1983 restoration efforts. It states that the most improvement was in the lakes' fishery and the cessation of the nearly annual fish kills. It also noted that recreational use had increased and the water quality showed improvements. Despite the improvements, it states that efforts to improve water quality need to be continued to secure the future of the lakes.
- 2002 - DEQ 2002 Water Quality Inventory, Section 305(b) report lists University Lake as not supporting the designated uses of primary contact recreation (PCR), secondary contact recreation (SCR), and fish and wildlife propagation (FWP). These are defined by DEQ as:

    - *Primary contact recreation (PCR)* - any recreational activity that involves or requires prolonged body contact with the water, such as swimming, water skiing, tubing, snorkeling and skin-diving.

    - *Secondary contact recreation (SCR)* - any recreational activity which may involve incidental or accidental body contact with the water and during which the probability of ingesting appreciable quantities of water is minimal, such as fishing, wading and recreational boating.

    - *Fish and Wildlife propagation (FWP)*- including the use of water for preservation and reproduction of aquatic biota such as indigenous species of fish and invertebrates, as well as reptiles, amphibians, and other wildlife associated with the aquatic environment. This also includes the maintenance of water quality at a level that prevents contamination of aquatic biota consumed by humans.

- 2005 – The U.S. Army Corps of Engineers (USACE), under the authority of Section 206 of the Water Resources Development Act, initiates an Aquatic Ecosystem Restoration Feasibility Study for a proposed restoration project. The purpose of the proposed project is to restore aquatic ecosystem function in the existing lakes in the Lake District. The federal/local cost for the project is $7 million, with a 65/35 percent split.
- 2008 – USACE Feasibility study is completed and the amount of the project balloons to $21 million.
- 2009 – The federal cap for the proposed restoration project is $4.6 million. Local sponsors (LSU, BREC and city-parish government) are unable to provide the funds needed to execute the plan.
- 2013 – USACE presents a report to local governmental and nongovernmental groups to determine if there is the possibility of proceeding with a master plan.
- 2014 – The Baton Rouge Area Foundation (BRAF) submits a request for proposal to hire a consultant team with privately raised funds. BRAF retains the Center for Planning Excellence to facilitate the selection process. GEC is also contracted by BRAF to collect geotechnical, topographic and bathometric data to supplement the USACE 2008 feasibility study. The consultant team selected to create the final lakes master plan is SWA Group with Jeffery Carbo and Landscape Architects.
- 2015 – Final lakes master plan is completed (http://www.batonrougelakes.org/). BRAF continues campaign to raise funds for construction.

MANAGEMENT ISSUES

Aquatic vegetation

Historically

Aquatic plants, especially submersed vegetation have played a minor role in managing University Lake. Sparse stands of coontail (*Ceratophyllum demersum*) that once existed in the lake's coves have since disappeared due to siltation issues.

Currently

Water hyacinth (*Eichhornia crassipes*), water lettuce (*Pistia stratiotes*) and American lotus (*Nelumbo lutea*) typically comprise less than five surface acres that require a foliar application at least twice a year. If left untreated, these nuisance plants tend to grow rapidly and are viewed as an eyesore by shoreline residents. Approximately 90 percent of the shoreline is established with emergent vegetation, primarily wild taro (*Colocasia esculenta*).

Problematic Species (as of December 15, 2015)
Water hyacinth (*Eichhornia crassipes*) - <1 acre
Water lettuce (*Pistia stratiotes*) - 1 acre
American lotus (*Nelumbo lutea)* - none

Past Control Measures

Biological

None

Chemical

See Table 1 for acreage of plant species treated by year from 2006 to 2015. See Table 2 for foliar herbicide treatments by plant species and acres during 2015.

Table 1. Acreage of plant species treated by year in University Lake, LA from 2006-2015.

UNIVERSITY LAKE ACRES OF AQUATIC VEGETATION TREATED BY YEAR										
SPECIES	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Water hyacinth	87	20	30	39	4	20	2	25	-	-
Water lettuce	4	-	1	38	4	20	7	6	-	5.5
American lotus	-	-	-	-	-	-	1	8	-	-
TOTAL:	91	20	31	77	8	40	10	39	0	5.5

Table 2. Foliar herbicide treatments by plant species and acres sprayed on the University Lake, LA during 2015.

UNIVERSITY LAKE ACRES OF AQUATIC VEGETATION TREATED IN 2015			
SPECIES	**ACRES**	**HERBICIDES***	**APPLICATION RATES**
Water lettuce	5.5	Diquat	0.75 gal/acre

*All herbicide applications included a non-ionic surfactant at a rate of 0.25 gal/acre.

Historically, water hyacinth and water lettuce have been controlled with a foliar application about twice a year. The herbicide 2,4-D was primarily used in the past to control water hyacinth. In recent years, diquat dibromide has been the herbicide of choice as water lettuce has been the more problematic plant. In 2013, with the occurrence of large areas of American lotus mixed with water hyacinth and water lettuce, a mix of chemicals was applied. The mix contained glyphosate (0.5 gal/acre), flumioxazin (4 oz/acre), and Thoroughbred surfactant (1 pint/acre). This mix proved to be highly effective when combating these 3 plants in a single application.

Physical:

None.

Limitations

University Lake is a very shallow lake making it difficult to perform foliar applications with a pump sprayer. Muddy water stirred up by the boat in shallow conditions makes the application more difficult and less effective. Spray drift is also a concern because of the close proximity to many homes on the lakeshore.

HISTORY OF REGULATIONS

Standardized Regulations

1955 - Special city ordinance for protection of migratory birds wintering on the lakes was passed, prohibiting operation of motorboats during the winter months.

1957-Swimming was banned and skiing discouraged.

Governed by City ordinance (Parks and Recreation, Chapter 4, Sections 3:74)
(SEE APPENDIX II – CITY ORDINANCES)

3:74-Fishing Regulations (City)

a. No commercial fishing
b. Rods, reels, and poles permitted
c. Use of trotlines, nets, other devices prohibited.
d. Fishing on main campus prohibited
e. Statewide size and creel regulations apply:
http://www.wlf.louisiana.gov/fishing/regulations

DRAWDOWN HISTORY

Drawdown date

No drawdowns have been conducted to date.

FISH KILLS / DISEASE HISTORY

A total of 13 fish kills were noted before restoration efforts in the early 80's. These fish kills were attributed to low oxygen levels resulting from the eutrophication process. Restorations efforts were successful in reducing the number of fish kills to the extent that they seldom occur. Although fish kills still occur, they are not as common as before lake restoration efforts in the early 80's. A major fish kill occurred in 2003 where an estimated 150,000 fish, primarily threadfin shad, perished.

CONTAMINANTS / POLLUTION

Water quality

Restoration efforts in the late 1970's and early 80's were successful in improving water quality conditions. However, nonpoint source pollution, particularly phosphorus-laden runoff from the urban watershed of the lakes and relatively high internal loading from nutrient-laden sediments continue to play roles in degrading the water quality of the lake. The combinations of nutrient loading, shallow depths, and high temperatures during the summer months cause severe drops in dissolved oxygen concentrations. Shoreline erosion also adds to water quality issues. Not only does the eroded material add to the nutrient loading problem, it also creates even more shallow conditions. University Lake also experiences high fecal coliform counts as a result of human activities within the watershed.

BIOLOGICAL

Fish sampling

To monitor the sport fishery of University Lake, LDWF initiated standardized sampling in 1977 (Table 1).

Table 3. Sampling efforts on University Lake, Baton Rouge, LA from 1977 – 2020.

UNIVERSITY LAKES SAMPLING	
1977	Rotenone 1–one acre set
1983	Shoreline seining
1994	Electrofishing – 2 stations (fall)
1995	Electrofishing – 4 stations (spring)
2006	Electrofishing – 3 stations (winter)

2007	Electrofishing – 3 stations (spring)
2008	Electrofishing – 3 stations (spring) Electrofishing – 1 station (winter)
2010	Electrofishing – 3 stations (spring) Electrofishing – 3 stations (fall)
2017	Electrofishing – 3 stations (spring) Electrofishing – 3 stations (fall)
2020	Electrofishing – 3 stations (spring) Electrofishing – 3 stations (fall)

Stocking History

To enhance the fishery, University Lake has been stocked with 152,704 Florida strain largemouth bass since 1984 (Table 2). In 1992, a largemouth bass weighing 15.38 pounds was caught in University Lake. The fish was certified as the Louisiana State record at that time. (Figure 3).

Table 4. Stocking history of University Lake, Baton Rouge, LA from 1984 – 2010.

YEAR	CHANNEL CATFISH	FLORIDA BASS	HYBIRD STRIPED BASS	SUNSHINE BASS
1984	1,500	32,400	12,000	
1985	1,500		6,850	
1986			10,000	
1987	5,840		7,920	
1991	5,016			
1992		4,000		
1993		5,002 (fingerlings)		
1994	5,084 (fingerlings)		65,000 (fry)	
1995	5,000 (fingerlings)	5,000 (fingerlings)	14,000 (fry)	
1996	3,840 (fingerlings)	15,186 (fingerlings)		
1998	10,055 (fry)			
2000		1,676 (fingerlings)		
2004	55 (adults) 201 (fingerlings)	761 (fingerlings)		
2005		1,437 (fingerlings)		1,521 (fingerlings)
2007	3,000 (fingerlings)	2,996 (fingerlings)		
2008		3,123 (fingerlings)		

2010		1,260 (fingerlings)		
2011		1,629		

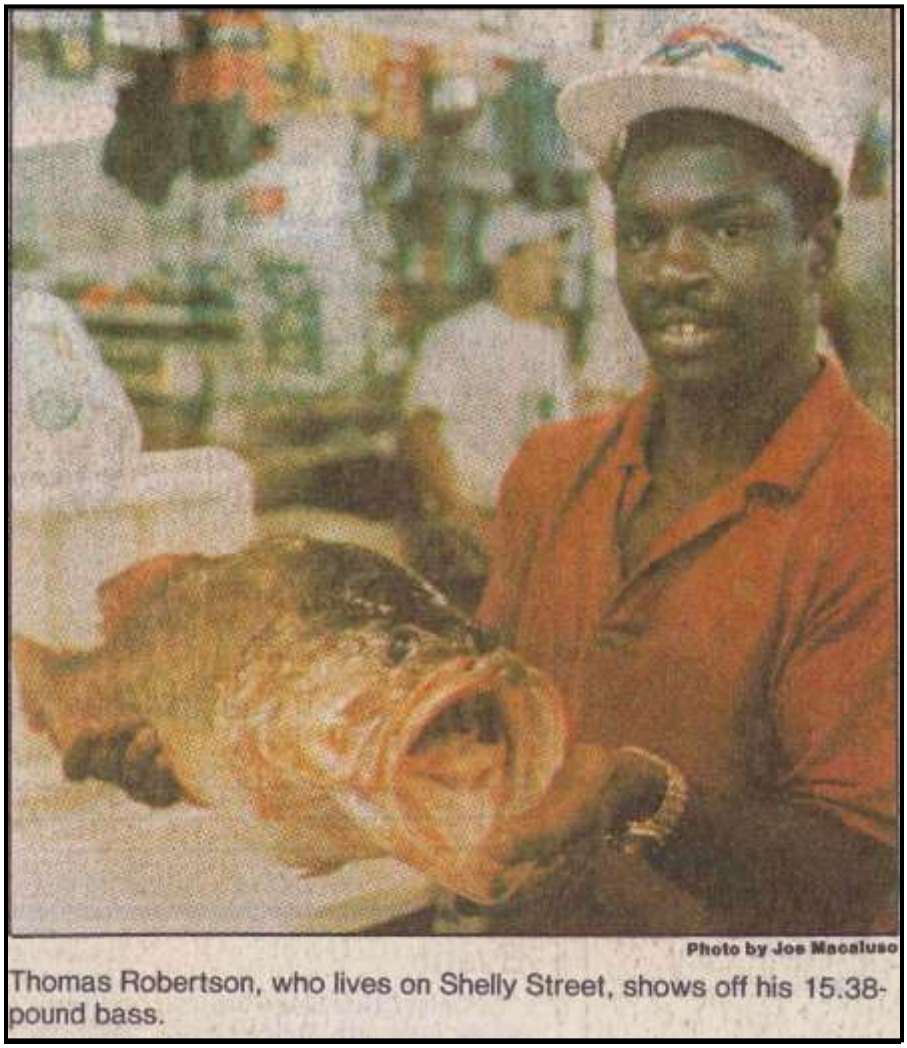

Figure 3. Photo of the University Lake, LA record largemouth bass. Photo from The Advocate, June 7, 1992.

Species profile

Fish species collected or known to occur in the University Lake system are found in Table 5.

Table 5. Fish species collected or known to occur in the University Lake system, LA.

Family, Scientific and Common Names

Lepisosteidae - gars
Lepisosteus oculatus - spotted gar

Anguillidae – freshwater eels
Anguilla rostrata – American eel

Clupeidae - herrings
Dorosoma cepedianum - gizzard shad
Dorosoma petenense - threadfin shad

Cyprinidae - carps and minnows
Pimephales promelas – fathead minnow
Notemigonus crysoleucas - golden shiner
Cyprinus carpio-carp
Carassius auratus - goldfish

Catostomidae – suckers
Ictiobus spp. - buffalo

Ictaluridae - North American catfishes
Ameiurus melas - black bullhead
Ameiurus natalis – yellow bullhead
Ictalurus furcatus - blue catfish
Ictalurus punctatus - channel catfish
Pylodictis olivaris - flathead catfish

Atherinopsidae - New World silversides
Me*nidia beryllina*-Inland silverside

Poeciliidae - livebearers
Gambusia affinis - western mosquitofish
Poecilia latipinna - sailfin molly

Centrarchidae - sunfishes
Lepomis cyanellus - green sunfish
Lepomis humilis - orangespotted sunfish
Lepomis megalotis - longear sunfish
Lepomis gulosus – warmouth
Lepomis macrochirus – bluegill
Lepomis microlophus - redear sunfish
Micropterus salmoides - largemouth bass
Pomoxis annularis – white crappie

Moronidae – temperate basses
Morone chrysops – white bass

Genetics

Before 2013, only one largemouth bass had been tested for the Florida allele. In 1992, a

trophy bass weighing 15.38 pounds was tested and the results were of a pure Florida strain. In 2013, 82.4% of largemouth bass tested carried the Florida allele (Table 6).

Table 6. Genetic analysis of largemouth bass from University Lake, LA 2013.

GENETICS					
Year	Number	Northern	Florida	Hybrid	Florida Influence
2013	34	17.6%	14.7%	67.7%	82.4%

Threatened/endangered/exotic species

Common carp are present in the lake. There are no reports of other invasive animals to date.

ANGLER SURVEYS

Historic information

Bank fishermen were surveyed in June and July 1985. Six days of creel surveys resulted in fourteen interviews with 9 reporting no catch. The remaining 5 interviews had 53 bream caught (most in the 2-3 inch range) and 4 catfish (3 were 6 inches long with the largest measuring 12 inches).

Current information

None

HYDROLOGICAL CHANGES

Limited dredging of University Lake was done (November 1981-winter 1982) as a restoration effort to reduce the number of fish kills occurring in the lake. Mean depth, volume and retention time doubled.

WATER USE

Hunting

No

Skiing

No

Scuba Diving

No

Swimming

No

Irrigation

No

Fishing

Yes

Boating

Yes, but no combustion engines allowed.

Other

Some non-contact recreation occurs such as canoeing, dog training, etc. LSU rowing team uses the lake for practice.

APPENDIX I – MAP AND LANDING

(return to boat docks)

APPENDIX II – CITY ORDINANCES

(return to regulation)

Parks and Recreation, Chapter 4, Sections 3:74

CHAPTER 4. - REGULATION OF CITY PARK LAKE AND NEW UNIVERSITY LAKE

Sec. 3:70. - Definitions. (City)

For the purpose of this chapter, the following terms, phrases, words and their derivations shall have the meaning given herein:

(1)

City Park Lake is that lake located along Dalrymple Drive in the city, owned by the city, and shall include the banks and areas adjacent to the lake.

(2)

New University Lake is that body of water generally extending from the causeway separating the body of water from City Park Lake to Stanford Avenue, and the Main Campus of Louisiana State University, and shall include any and all other bodies of water in this general area, the bottom of which belongs to or is dedicated to Louisiana State University, and shall further include the banks and areas adjacent to such bodies of water.

(City Code 1951, Title 3, § 70)

Sec. 3:71. - Hunting prohibited. (City)

No person shall hunt or be permitted or allowed to hunt in or about the City Park Lake or the New University Lake at any time or under any conditions.

(City Code 1951, Title 3, § 71)

Sec. 3:72. - Destruction, taking of lake property structures, equipment. (City)

No person shall willfully mark, deface, disfigure, tamper with or displace or remove any tables, benches, telephone booths or other public utilities, signs, notices or placards, or other structures or equipment installed by or with authority of the recreation and park commission, or any other governmental agency, in or along the banks or other areas adjacent to City Park Lake and New University Lake.

(City Code 1951, Title 3, § 72)

Cross reference—Simple criminal damage to property, § 13:56; misdemeanor theft, § 13:67.

Sec. 3:73. - Construction, erection of building or structures; permission required. (City)

No person shall construct or erect any building or structure, of whatever kind, whether permanent or temporary in character, in or along the banks and areas adjacent to City Park Lake and New University Lake, except where special permission has been granted therefor by the superintendent of the recreation and park commission or his authorized agent as to City Park Lake, and by an appropriate official of Louisiana State University as to New University Lake.

(City Code 1951, Title 3, § 73)

Sec. 3:74. - Fishing regulations. (City)

(a)

Commercial fishing. No person shall engage in commercial fishing or the buying or selling of fish caught in either the City Park Lake or the New University Lake.

(b)

Rods, reels and poles permitted. No person shall fish in either of the lakes except with rods and reels and poles, and then under such regulations and in such areas as may be established from time to time by the superintendent of the recreation and park commission, or Louisiana State University as to New University Lake.

(c)

Use of trotlines, nets, other devices prohibited. No person shall place any trotlines or nets in either of the lakes.

(d)

Fishing on main campus prohibited. No person shall fish at any time along or on the banks of the New University Lake bordering the main campus of Louisiana State University.

(City Code 1951, Title 3, § 74; Ord. No. 7403, § 1, 1-11-84)

Sec. 3:75. - Reserved.

Editor's note—Section 3:75, prohibiting the dumping of garbage, etc., on the banks of City Park Lake and New University Lake, derived from City Code 1951, title 3, § 75, was repealed by § 8 of Ord. No. 9340, adopted Sept. 25, 1991. See § 6:426 et seq.

Sec. 3:76. - Superintendent of commission, director of public works authorized to remove devices, obstructions, etc. (City)

The superintendent of the recreation and park commission, the director of the department of public works, or any employee designated by either of such officers, and any authorized police officer, shall have the authority to remove or cause to be removed from the lakes, any lines, bottles, poles, sticks, devices or obstructions placed in the lakes in violation of the provisions of this chapter.

(City Code 1951, Title 3, § 76)

Sec. 3:77. - Use of motorboats; restrictions. (City)

(a)

City Park Lake. No motorboats will be permitted upon City Park Lake. The use of any motor other than an electric trolling motor is hereby prohibited. Notwithstanding the foregoing, nothing herein shall prohibit the city-parish from using motorboats upon City Park Lake on official business.

(b)

New University Lake. No motorboats will be permitted upon the New University Lake.

(c)

Motorboat defined. The term motorboat where used in this chapter shall include every type of boat, ship, vessel or craft which is capable of being used in, on or under water, and which is propelled by machinery.

(City Code 1951, Title 3, § 77; Ord. No. 7403, § 1, 1-11-84)

Sec. 3:78. - Restrictions applicable to New University Lake to be additional, supplemental. (City)

Such restrictions as may be herein applicable to New University Lake shall be in addition, and supplemental, to any restrictions adopted by Louisiana State University.

(City Code 1951, Title 3, § 78)

Sec. 3:79. - Penalty. (City)

Any person violating the provisions of this chapter shall, upon conviction, be subject to a fine of not more than two hundred dollars ($200.00), or imprisonment for not more than sixty (60) days, or both, at the discretion of the court.

(City Code 1951, Title 3, § 79)